IR-4 NEW PRODUCTS/TRANSITIONAL SOLUTION LIST - AUGUST, 2001

Compiled by J. Baron, IR-4 Project

The following ***New Pest Control Products/Transition Solutions List*** contains brief description of numerous new pest control materials that have been introduced over the last several years. Additionally, it contains information on some "older" crop protection chemicals that are believed to have room for new uses. Many of these pest control tools offer great promise to fill the pest management voids expected from the cancellation of pesticides/pesticide uses associated with the Food Quality Protection Act. Some of these new products have been classified by the EPA as reduced risk for one or more uses while others have characteristics that make them more desirable than some of the existing products. Several of the pest control materials have been registered by the EPA for certain crops, while others have their initial registration pending. In most cases, the usefulness of these new tools on minor crops is still unknown.

HERBICIDES

Herbicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Alternaria destruens (SMOLDER)	*UAP*	*Microbial biopesticide*	*Controls dodder (swamp,largeseed, field, and smallseed)*	***Biopesticide**. Pending use on cranberry. Potential use on tomato and pepper*
alpha-metolachlor (DUAL MAGNUM)	*Syngenta*	*Chloracetanilide*	*Same spectrum as metolachlor (DUAL)*	***Reduced Risk Product**. Registered on corn, cotton, peanuts, beans, peas, potato, safflower, sorghum, soybean, dry bulb onion, cabbage, celery, bell pepper and peach (NJ only). Pending use on tomato, non-bell pepper, grass seed, sunflower, sugar beets, carrot, horseradish, radish, spinach, rhubarb, swiss chard and asparagus. Potential use on garden beets, turnip greens, green onion, leek, parsley, broccoli, cauliflower, Chinese cabbage, collard, mustard greens, kale, melons, caneberry, blueberry, pumpkin, and sesame.*
Amicarbazone (BAY MKH 3586)	*Bayer*	*Triazolinone*	*Applied at rates up to 500 g ai/ha (0.45 lb ai/A) to the soil preplant or pre-emergence. It also has burndown activity. Soil and burndown activity is primarily on broadleaf weed species.*	*Potential use in corn and sugarcane*
Azafenidin (MILESTONE)	*DuPont*	*Pyridinone (PPO Inhibitor)*	*Broad spectrum pre-emergence residual herbicide*	*Pending use on citrus, sugarcane, grape, pome fruit, stone fruit, and tree nuts/pistachio. Potential use on blueberry, asparagus, coffee and pineapple*
Azimsulforuon (GULLIVER)	*DuPont*		*Grasses and broadleaf weeds*	*Potential use on rice (international registrations approved)*
BAS 615 H.	*BASF*	*Isoindoldione (Inhibits protoporphyrinogen oxidase).*	*It is particularly active post-emergence on Galium aparine, among other broadleaf species, in small grains at 30 to 50 g ai/ha (0.027 to 0.045 lb ai/A).*	
Beflubutamid (UBH-820)	*Ube Industries*	*Phenoxybutanamide (inhibits phytoene desaturase).*	*Post-emergence control of broadleaf weeds at rates of 170 to 255 g ai/ha (0.15 to 0.23 lb ai/A)*	*Potential use on wheat, barley, rye, and triticale*
Bensulfuron methyl (LONDAX)	*DuPont*	*Sulfonylurea*	*Most broadleaf and sedge weeds*	*Registered on rice*

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Bispyribac sodium (REGIMENT)	*Valent & Kumiai*	*Sulfonylurea (ALS Inhibitor)*	*Annual/perennial grasses and broadleaf weeds including herbicide resistant barnyardgrass.*	***Candidate Reduced Risk Product**. Pending registration on rice*
Butafenacil (REBIN) (INSPIRE) (CGA 276854)	*Syngenta*	*PPO Inhibitor*	*Controls important grasses, broadleaf and sedge weeds*	***OP Replacement (defoliant tribufos).** Pending registration on cotton and corn. Potential use on sugar beet, cereals, citrus, apple, pear, grape, garlic, shallots and maybe onion.*
Carfentrazone-ethyl (AFFINITY, AIM)	*FMC*	*Aryl triazolinone (PPO Inhibitor)*	*Numerous broadleaf weed, including cocklebur and water hemp.*	***Reduced Risk Product.** Registered on field corn, wheat, rice, sorghum, barley, sweet corn, oats, soybean, cotton, and caneberry. Pending use on potato, and hop.*
Cinidon-ethyl (LOTUS)	*BASF*	*Isoindoldine (Protox inhibitor)*	*Post-emergence for control of problem broadleaf weeds.*	*Unknown status on wheat, barley, and oat. International registrations approved.*
Clethodim (SELECT) (PRISM)	*Valent*	*Cyclohexanone ACCase inhibitor*	*Activity only on grass weeds*	*Registered on cotton, soybean, sugar beet, garlic, tomato, alfalfa, dry bean, peanut, dry bulb onion, shallot, apple, grape, root and tuber vegetables, sunflower, other fruiting vegetables, carrots, radish, celery and other leaf petiole subgroup, melon subgroup, squash and cucumber subgroup, cranberry, strawberry, and clover. Pending use on beet, head and stem Brassica, other cucurbit vegetables, canola, and other bulb vegetables. Potential use on hop.*
Clodinafop-propargyl (DISCOVER)	*Syngenta*	*Pyridylory-phenoxy propionate (ACC ase)*	*Selective post-emergence of wild oats, annual grasses and other weeds. Must be combined with a saftner.*	*Registered on wheat*
Clomazone (COMMAND)	*FMC*	*Isonazolidinone - Carotenoid biosynthesis inhibitor*	*Material controls a broad spectrum of grasses and broadleaf weeds.*	*Registered on soybean, cotton, pepper, succulent pea, cucurbit vegetables, cabbage, sweet potato, snap bean, tuberous and corm vegetables, rice, and sugarcane. Pending use on mint, broccoli, and pea.*
Clopyralid (STINGER)	*Dow AgroSciences*	*Pyridone*	*Controls a broad spectrum of broadleaf weeds including hard to control Canada thistle,*	*Registered on asparagus, field corn, grass seed, mint, and sugarbeet, wheat, barley, oats, and crambe. Pending use on strawberry and cranberry.*
Cloransulam-methyl (FIRSTRATE)	*Dow AgroSciences*	*Sulfonamide (ALS Inhibitor)*	*Can be applied pre-emergence or post-emergence to control broadleaf annual weeds*	*Registered on soybean (in combination with other products). Pending use on cotton.*
<u>Colletotrichum gloesporioides</u> f. sp <u>malvae</u> (MALLET WP)	*Encore Technologies*	*Fungus*	*It is pathogenic to round-leaved mallow, small flowered mallow, common mallow, and velvetleaf*	***Biopesticide.** Pending use on all crops*
Cyhalofop-butyl (CLINCHER)	*Dow AgroSciences*	*Phenoxy-propionate*	*Post-emergence graminicide*	***Reduced Risk Product. Pending use on rice.** Potential use on oat, barley and wheat. (International registrations approved).*
Diclosulam (STRONGARM)	*Dow AgroSciences*	*Sulfonamide (ALS Inhibitor)*	*Can be applied pre- or post-emergence for broadleaf weeds such as morningglory, cocklebur, velvetleaf and nutsedge*	*Registered on peanuts and soybeans.*
Diflufenzopyr (DISTINCT)	*BASF*	*Pyridine (Auxin transport inhibitor)*	*Annual grasses and broadleaf weeds. Sold in a pre-mix with dicamba*	***Reduced Risk Product**. Registered on corn. Pending registrations on sweet corn and pasture grasses*

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Dimethenamid (FRONTIER) (OUTLOOK)	*BASF*	*Chloroacetamide*	*Annual grasses, broadleaf weeds, yellow nutsedge*	*Registered on dry beans, field corn, sweet corn, popcorn, seed corn, peanut, grain sorghum, and soybean. Pending use on dry bulb onion, sugarbeet and garden beets.*
Dimethenamid-P (FRONTIER X-2)	*BASF*	*Chloroacetamide, single isomer of dimethenamid*	*Annual grasses, broadleaf weeds, yellow nutsedge*	***Reduced Risk Product.*** *Pending use on corn, peanut sugarbeet, potato, seed grass, soybean, dry bulb onion,green onion and turnip. Potential on garden beets.*
Drechsiera monoceras (MTB-951)	*Mitsui Chemical*	*Biopesticide*	*Barnyardgrass*	*Potential use on rice (international use pending).*
Dyers Woad Rust		*Biological herbicide*	*Specific to Dyers Woad*	*Pending on rangegrass*
Ethametsulfuron-methyl (MUSTER)	*DuPont*	*Sulfonylurea (ALS inhibitor)*	*Active against many grasses and broadleaf weeds.*	*Registered on canola, crambe and rapeseed.*
Flazasilfuron (MISSION)	*Syngenta & ISK*	*Sulfonylurea (ALS inhibitor)*	*Active against many grasses and broadleaf weeds with pre- and post-emergence activity at 50 grams/ha*	*Potential use on grape and olive (international registrations approved).*
Floransulam (PRIMUS) (BOXER)	*Dow AgroSciences*	*Triazolopyrimidine sulfonanilide, (ALS inhibitor)*	*Herbicide for broadleaf weeds It provides post-emergence control of broadleaf weeds, particularly Galium aparine (catchweed bedstraw), at rates of 5 to 7.5 g ai/ha (0.0045 to 0.0067 lb ai/A).*	*Potential use on wheat, barley, and oat (international use approved).*
Fluazolate JV 485	*Bayer and Monsanto*	*Pyrazole Benzoate*	*Pre-emergence control of broadleaf weeds and grasses*	*Potential use on wheat (international use approved).*
Flucarbazone-sodium (EVEREST 70 WG)	*Bayer*	*Sulfonylaminocarbonyl-triazolinone,(ALS inhibitor)*	*Low rate (30 g ai/ha) post-emergence grass herbicides on broadleaf weeds including wild oat and green foxtail*	***Reduced Risk Product.*** *Registered use on wheat.*
Flufenacet (AXIOM)	*Bayer*	*Oxyacetimide*	*Soil applied for annual grasses and some broadleaf weeds.*	*Registered on corn, soybean and grass seed as part of a premix herbicide. Potential use on potato, tomato, onion, pepper, and rice*
Flufenpyr-ethyl S-3153	*Valent*	*PPO Inhibitor*	*Excellent control of velvetleaf and morninglories.*	***Candidate Reduced Risk Product****. Pending registrations on corn, soybean, and sugarcane. Potential use on snap bean, lima bean and dry beans.*
Flumetsulam (BROADSTRIKE)	*Dow AgroSciences*	*Sulfonamide (ALS Inhibitor)*	*Controls broadleaf and grass weeds*	*Registered on corn and soybean (as part of a premix). Pending registrations on dry bean*
Flumiclorac (RESOURCE)	*Valent*	*N-phenylphthalimide derivative (PPO Inhibitor)*	*Post-emergence control of velvetleaf*	***Reduced Risk Product****. Registered on corn and soybean.*
Flumioxazin (VALOR 50 WD)	*Valent*	*N-phenylphthalimide derivative (PPO Inhibitor)*	*Low use rate pre-emergence broadleaf herbicide with contact activity and residual soil activity.*	*Registered on soybean and peanut. Pending registration on cotton, sugarcane, grape and almond.. Potential uses on pome fruit, stone fruit, other tree nuts, carrot, tomato, dry bean and potato.*
Fluroxypyr (STARANE F)	*Dow AgroSciences & UAP*	*Picolinic acid*	*Post-emergence applications to control annual and perennial broadleaf weeds, including vol. potato, kochia and nightshade.*	*Registered for wheat, barley and oats. Pending use on bulb onion, sweet corn and sorghum. Potential uses on spinach, pome fruit, stone fruit, tree nuts, and grape.*
Flurtamone	*Aventis*	*Furanone*	*Used as a pre- and early post-*	*Potential use on wheat, barley, oats, sunflower and pea (international registrations*

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Herbicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
			emergence for control of annual broadleaf weeds and some grasses	*approved).*
Fluthiacet-methyl (APPEAL) (ACTION)	*Entek Kumiai Syngenta*	*Protox Inhibitor*	*Post-emergence control for velvetleaf, lambsquarter and other broadleaf weeds.*	*Registered on soybean. Pending use on corn and cotton (defoliant).*
Foramsulfuron (AE F 130360)	*Aventis*	*Sulfonylurea (ALS inhibitor)*	*Post-emergence control of most annual and perennial grasses.*	*Pending registration on corn*
Glufosinate (LIBERTY) (RELY)	*Aventis*	*Butanoic acid*	*Broad spectrum, non-selective*	*Registered on apples, bananas, grapes, potatoes, field corn, soybean and tree nuts. Pending use on rice, sweet corn, canola, potato, sugarbeet.*
Halosulfuron (PERMIT) (SEMPRA) (SANDEA)	*Monsanto / Gowan*	*Sulfonylurea (ALS inhibitor)*	*Nutsedge, velvetleaf, cocklebur, other broadleaf weeds*	***Methyl Bromide Alternative.*** *Registered on field and sweet corn, cotton, grain sorghum, rice, sugarcane, cucurbits and tree nuts/pistachio. Pending use on tomato. Potential use on snap/dry beans, and asparagus.*
Imazamox (RAPTOR)	*BASF*	*Imidazolinone (ALS inhibitor)*	*Annual grasses and some broadleaf*	***Reduced Risk Product****. Registered on soybean. Pending uses on grass, edible legumes, and canola. Potential use on sunflower, rice and wheat.*
Imazapic (CADRE 2AS)	*BASF*	*Imidazolinone (ALS inhibitor)*	*Pre- and post-emergence control of annual grasses and broadleaf weeds*	***Reduced Risk Product****. Registered on peanut. Pending uses on soybean, grass, and sugarcane.*
Iodosulfuron (HUSAR) (AE-1715)	*Aventis*	*Sulfonlyurea (ALS inhibitor)*	*Early to mid-POST applications for control of grass and broadleaf weeds. May be mixed with other materials to enhance activity.*	*Pending use on corn. Potential use on cereals (international registration approved).*
Isoxaflutole (BALANCE)	*Aventis*	*Isoxazole*	*Soil applied for many annual grasses and some broadleaf weeds*	*Registered on field corn (geographically restricted) Pending use on sweet corn, wheat, and barley. Potential use on potato, sweet potato, chickpea, GM soybeans and GM sugarcane.*
Mesosulfuron-methyl (AEF-130060)	*Aventis*	*Sulfonylurea*		*Potential use on wheat, rye and triticale.*
Mesotrione (CALLISTO)	*Syngenta*	*Cyclohexanedione, It disrupts carotenoid biosynthesis by inhibit of phydroxyphenlylpyruvate dioxygenaset.*	*Pre-and post-emergence control of annual grasses and broadleaf weeds, including sulfonylurea resistant weeds. Will be marketed as a stand-alone product, as well as a premix.*	***Reduced Risk Product.*** *Registered on field corn. Pending use on sweet corn.*
Metosulam (BARKO)	*Dow AgroSciences*	*ALS inhibitor*	*Preemergence control of broadleaf weeds*	*Potential in corn and soybean. (International registrations approved)*
Ofmesotrione	*Syngenta*			*Pending use on field corn*
Oxadiargyl (TOPSTAR 80 WP)	*Aventis*	*Oxadiazole*	*Broad spectrum weed control, similar to oxidiazinon*	*Potential use on rice, sugarcane, sunflower, vegetables and tree crops (international registrations approved)*

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Oxasulfuron (DYNAM)	*Syngenta*	*Sulfonylurea, (ALS inhibitor)*	*Post-emergence for cocklebur, ragweed, and other broadleaf weeds*	*Potential use on soybean*
Pelargonic Acid (SCYTHE)	*Dow AgroSciences*	*Fatty acid*	*Contact, non-selective broad spectrum foliar applied material*	***Biopesticide*** *Registered on all crops*
Pethoxamid (SUCCESSOR 600)	*Tokuyama*		*Selectively controls certain grasses and broadleaf weeds*	*Potential use in corn and soybean*
Picolinafen (PICO)	*BASF*	*Aryloxypicolinamide (inhibits phytoene desaturase)*	*Post-emergence use to control annual broadleaf weeds. The application rate will be 50 g ai/ha (0.045 lb ai/A). . It will be sold as a pre-mix*	*Potential use on wheat, barley, rye, and triticale (international registrations approved).*
Profoxydim (AURA) (TETRIS)	*BASF*	*Cyclohexanone graminicide, an ACCase inhibitor.*	*Controls grass weeds at use rates ranging from 50 to 200 g ai/ha (0.045 to 0.18 lb ai/ha)*	*Unknown status on rice. International registrations approved.*
Prosulfuron (PEAK)	*Syngenta*	*Sulfonylurea (ALS inhibitor)*	*Post-emergence for cocklebur, kochia, lambsquarter, pigweed, and velvetleaf*	*Registered on sorghum, wheat, and cereals. Potential use on sugarcane*
Propoxycarbazone BAY MKH 6561 (OLYMPUS) (ATTRIBUTE)	*Bayer*	*Sulfonylaminocarbonyl triazolinone (ALS inhibitor)*	*Post-emergence grass weed control.. Broadleaf weeds in the Cruciferae family are also controlled. Also controls <u>Bromus</u> sp. at 30 to 45 g ai/ha.*	*Pending use on wheat, rye, and triticale.*
Pyraflufen-ethyl (ET-751)	*Nichino America*	*Protox inhibitor*	*Post-emergence herbicide for general non-selective control of weeds or use as dessicant. Low use rates, 1 g ai/A*	*Pending use on wheat, barley, corn, potato, soybean, and cotton.*
Pyribenzoxium (PYANCHOR)	*Dow AgroSciences*		*Post emergence material with activity on numerous annual and perennial grasses, broadleaf and sedges.*	*Potential use on rice (international registrations approved).*
Pyridate (TOUGH)	*Syngenta*	*Phenylpyridazine*	*Controls some broadleaf weeds*	*Registered on corn, peanuts, chickpea, Head and Stem Brassica (broccoli, cabbage, cauliflower, collards, ect.) and mint. Potential on alfalfa.*
Pyriftalid (CGA-279233)	*Syngenta*	*Acetolactate synthase inhibitor*	*Mainly a grass material, pre- and post-emergence for barnyardgrass.*	*Pending use on rice.*
Pyrithiobac-sodium (STAPLE)	*DuPont*	*Benzoate (ALS inhibitor)*	*Controls a wide range of broadleaf weeds via pre- and post-emergence application*	*Registered on cotton*
Quinclorac (FACET) (PARAMOUNT)	*BASF*	*Quinoline carboxylic acid*	*Post-emergence control of annual grasses and broadleaf weeds*	*Registered on rice, sorghum and wheat. Pending use on cranberry.*
Quizalofop-ethyl (ASSURE) *Rimsulfuron*	*DuPont* *DuPont*	*Phenoxy propionic ester* *Sulfonylurea (ALS*	*Post emergence grass herbicide* *Annual grass and broadleaf weeds*	*Registered on cotton, beans, soybean, canola, mint, lupin, pea, sugar beet and lentil. Potential on pineapple and mustard seed.* ***Methyl Bromide Alternative.*** *Registered on field corn (as part of a pre-mix) tomato*

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Herbicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(MATRIX)		*inhibitor)*		*and potato.*
Sethoxydim (POAST)	*BASF*	*Cyclohexanone (ACCase inhibitor)*	*Post emergence grass herbicide*	*Registered on soybean, cotton, corn, stone fruit, beans, garden beets, caneberry, carrot, cilantro, cranberry, endive, artichoke, grape, horseradish, leafy vegetables, Brassica leafy vegetables, peppermint, spearmint, asparagus, tuberous and corm vegetables. Pending use on pistachio, safflower, buckwheat and sunflower. Potential use on radish, okra, grass seed, herbs, and tropical fruits.*
Sulfentrazone (AUTHORITY)	*FMC*	*Aryl triazinone (PPO inhibitor)*	*Controls both broadleaf and grass species.*	*Registered on soybean. Pending use on horseradish, lima bean, cowpea, chickpea, dry pea, strawberry, sunflower and sugarcane. Potential use on cabbage.*
Sulfosulfuron (MAVERICK)	*Monsanto*	*Sulfonylurea (ALS inhibitor)*	*Grasses/ broadleaf weeds including quackgrass, bromes and mustards*	*Registered on wheat. Pending use on barley, oats & cereals. Potential use on potato.*
Tepraloxydim (EQUINOX) (ARAMO)	*BASF*	*Cyclohexanedione, (ACCase ihnibitor)*	*Provides post-emergence grass weed control in broadleaf crops, at rates of 50 to 75 g ai/ha (0.045 to 0.067 lb ai/A). At rates of 100 g ai/ha (0.089 lb ai/A) it will control perennials such as johnsongrass, and suppress bermuda grass.*	*Registered on soybean, cotton, and canola. Pending use on sugarbeet. Potential use on beans, peas, onion, leek, and flax.*
Thiazopyr (VISOR)	*Dow AgroSciences*	*Pyridine*	*Annual and perennial broadleaf weeds, including crabgrass and nutsedge*	*Registered on citrus. Potential use on tree fruit, berries, alfalfa, cranberry, olive.*
TM 435	*Tomen*			*Potential use on wheat, small grains and corn*
Tralkoxydim (ACHIEVE)	*Syngenta*	*Cyclohexandione (ACCase inhibitor)*	*Post-emergence for grass weeds such as wild oats, green and yellow foxtail, and annual ryegrass.*	***Reduced Risk Product**. Registered on wheat and barley.*
Triasulfuron (AMBER)	*Syngenta*	*Sulfonylurea (ALS inhibitor)*	*Broadleaf weeds*	*Registered on wheat, barley, pastures and rangeland.*
Tribenuron-methyl (EXPRESS)	*DuPont*	*Sulfonylurea (ALS inhibitor)*	*Broadleaf weed*	*Registered on wheat and barley.*
Trifloxysulfuron (CGA-362622)	*Syngenta*	*Sulfonylurea (ALS inhibitor)*	*Broadleaf weeds*	*Pending use on cotton and sugarcane. Potential use on tomato and pepper as methyl bromide alternative*
Triflusulfuron (UPBEET)	*DuPont*	*Sulfonylurea (ALS inhibitor)*	*Broadleaf weeds*	*Registered on sugar beet. Potential use on chicory.*

PLANT GROWTH REGULATORS

Plant Growth Regulators (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
Ammonium thiosulfate	*Siemer*	*Ammonium thiosulfate*	*Active as blossom thinner*	*Pending on apple*
AVG (RETAIN)	*Valent BioScience*	*Lycine analog*	*Plant growth regulator that improves harvest management by inhibiting ethylene biosysthesis.*	*Registered on apple, pear,* ***and stone fruit****. Potential use on citron melon, cotton, melons, muskmelons, nectarine, tomato, watermelon and tropical fruits.*
Bacillus cereus	*Microflo*	*Bacteria*	*Growth regulator that assists in boll retention and larger bolls.*	***Biopesticide.*** *Registered on cotton*
Clofencet (DETASSELOR)	*Monsanto*	*Carboxylic acid*	*Hybridizing agent*	*Registered on barley,wheat, and soybean*
Copper Ethylenediamine complex (INFERNO)	*Griffin*	*Copper organic complex*	*Desiccant and harvest aid*	*Registered on potato*
CPPU	*KIM-C1*			*Pending on almond, apple, blueberry, cranberry, fig, grape, kiwifruit, olive, pear, and plum.*
Diphenylamine	*Syngenta*	*Diphenylamine*	*Protects the fruit from scald*	*Registered on apple. Pending use on pear*
1,2,6-DIPN (AMPLIFY)	*UAP*	*Diisopropyl naphthalene*	*Controls sprouts on storage potatoes. Works in synergy with CIPC*	*Pending on potato.*
Forchlorfenuron	*KIM-C1*			*Registered on almond, apple, blueberry, cranberry, fig, grape, kiwifruit, olive, pear, and plum.*
GABA (AUXI GRO)	*Emerald Bioagriculture*	*Butanoic acid*	*Enhances crop growth and yield*	*Registered on broccoli, cabbage, cauliflower, cotton, bell peppers, lettuce, peanut, potato, snap bean, spinach and tomato. Pending use on all crops.*
Lyso PE	*JP Bioregulators*	*Phospholipid*	*Ripening and shelf life enhancement*	***Biopesticide.*** *Pending on apple, citrus, cranberry, nectarine, peach, pear, strawberry, tomato, grape, blueberry, cherry and pepper.*
MBTA (ECOLYST)	*Valent BioScience*	*Substituted tertiary amine*	*Novel PGR that promotes sugar accumulation in processing oranges*	***Reduced Risk Product****. Registered on orange. Pending use on grapefruit.*
1-MCP (ETHYLBLOC)	*BioTech-nologies for Horticulture*	*Cyclopropene*	*Inhibits the attachment of ethylene to ethylene receptor for a post- harvest storage extension*	***Biopesticide****. Registered in numerous fruits and vegetables*
Mepiquat Chloride (PIX)	*BASF*	*Quartenary ammonium*	*Shortens plant internodes and plant height*	*Registered on cotton. Pending use on grapes. Potential use on onion, garlic, melons, pecan, okra, pepper, and sweet potato.*
Prohexadione Calcium (APOGEE)	*BASF/Kumiai Chemical*	*Calcium Carboxylate*	*Reduces vegetative growth-better balance between canopy development and fruit production*	***Reduced Risk Product****. Registered on pome fruit, pea, seed grass, and peanut. Potential use on rice, sweet cherry, hop, mint, seed potato, strawberry, sweet potato, avocado, and mango.*
RITE SIZE	*Agtrol*		*Manages the crop load*	*Potential use on apple.*
Sodium nitrophenolate (ATONIK)	*Asahi Mfg. Ltd.*	*Combination of sodium nitrophenolates and nitroguatalolate*	*Increased nutrient uptake, resulting in improved yields*	*Potential use on all crops.*
Trinexapac-methyl (PALISADE)	*Syngenta*	*Cyclohexane carboxylic acid*	*Growth regulator with use resulting in less potential for lodging, more efficient seed harvest, and improved*	*Registered on ryegrass seed. Potential use on pome fruit, sugarcane, rice, onion, le, alfalfa, and citrus.*

Plant Growth Regulators (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
			seed set.	

INSECTICIDES

Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Abamectin (AGRIMEK) (AVID) (ZEPHYR) (CLINCH)	*Syngenta*	*Macrocylic lactone glulcoside (Avermectin)*	*Broad spectrum araricide with activity on leafminers, Colorado potato beetle, and pear psylla. Weak against sucking insects and thrips. Good IPM tool with short re-entry interval. Translaminar activity providing long residual activity.*	*Registered on cotton, citrus, potato, celery, tomato bell pepper, head lettuce, almond, walnut, pear, apple, hop, strawberry, cucurbit vegetables, grape, tomato, pepper, seed alfalfa and celeriac. Pending use on avocado, basil, leaf lettuce, spinach, and other leafy vegetables, plum, Brassica leafy vegetables and other fruiting vegetables, onion, caneberry, papaya, tree nut/pistachio, tuberous and corm vegetables, stone fruit, guava, chives, and beans (dry, snap, lima).*
Acequinocly/TM 413 *(KANREMITE) (PITON)*	*Tomen*	*Not disclosed*	*Broad spectrum mite control (no rust mite activity). Easy on beneficials with long residual activity*	***Candidate Reduced Risk Product.*** *Pending on pome fruit, citrus fruit and almond. Potential use on stone fruit, grape, strawberry, hop, and miscellaneous vegetables*
Acetamiprid (ASSAIL) (ADJUST) (PRISTINE)	*Aventis*	*Chloronicotinyl*	*Broad spectrum control with contact and systemic activity via foliar applications. Excellent on sucking pests like aphids and whitefly.*	***Reduced Risk Product and OP Alternative.*** *Pending foliar use for ASSAIL formulation on pome fruit, citrus fruit, grape, Brassica leafy vegetables, leafy vegetables, fruiting vegetables, cotton, potato and tobacco. Pending seed treatment use (ADJUST formulation) on canola and mustard. Potential use on eggplant, spinach, and greenhouse vegetables.*
Azadirachtin (NEEMIX) (NIMBECIDINE)	*Certis USA PBT International*	*Extract from neem oil which acts as a hormonal analog.*	*Disrupts insect molting. Target pests include whitefly, leafminer, and Lepidoptera*	***Biopesticide.*** *Registered on citrus, pome, stone fruits, grape, berries, cranberry, strawberry, tree nuts, cucurbit vegetables, bulbs vegetables, Brassica leafy vegetables, legume vegetables, fruiting vegetables, root & tuber vegetables, herbs/spices.*
Bacillus sphaericus	*Valent Bioscience*	*Bacteria*		***Biopesticide.*** *Potential registration on all crops.*
Bacillus thuringensis	*Numerous*	*Bacteria*	*New strains of Bt are being discovered that have activity against numerous pests.*	***Biopesticide.*** *Registered on most crops as a spray. Also registered as Plant-Incorporated Protectant in genetically modified cotton, potato, corn and sweet corn.*
Beauveria bassiana (MYCOTROL) (NATURALIS)	*Emerald Bioagriculture Troy Bio-Sciences*	*Insect pathogenic fungi*	*Corn borer, grasshopper, cricket, locust, aphids and whitefly*	***Biopesticide.*** *Potential registration on all crops*
Beauveria brongniartii	*Federal Republic of Germany*	*Insect pathogenic fungi*	*Targeted for soil dwelling pests*	***Biopesticide.*** *Potential registration on pome and stone fruit.*
Bifenazate (ACRAMITE) (FLORAMITE)	*Uniroyal*	*Carbazate - New mode of action with no cross resistance*	*Controls spider and European red mites, including eggs and motiles. Provides quick knockdown. Safe on predator mites.*	***Reduced Risk Product and OP Alternative****. Pending use on pome fruit, stone fruit, grape, strawberry, hop, cotton and greenhouse tomato. Potential use on fruiting vegetables, cucurbit vegetables, caneberry, nut crops, wheat, and mint*
Bifenthrin (CAPTURE) (BRIGADE)	*FMC*	*Pyrethroid*	*Broad spectrum activity on aphids, armyworms, cutworms, flea beetles, mites, corn borers.*	*Registered on cotton, corn, strawberry, hops, artichoke, cucurbit vegetables, edible podded legumes, eggplant, canola, crambe, rapeseed, head and stem Brassica, succulent shelled beans/peas, caneberry, grape, head lettuce, bell pepper, non-bell*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
				pepper and seed alfalfa. Pending use on citrus, celery, tomato, potato and banana.
Bistrifluron (DBI-3204)	*Dongbu Hannong Chemical*		*Controls lepidopteran pests*	*Potential use on vegetables and fruit*
Buprofezin (APPLAUD)	*Nichino America*	*Thiadiazine - IGR, unique mode of action, inhibits chitin synthesis*	*Good activity for nymphal stages of leafhoppers, plant hoppers, scales, and whiteflies.*	*Registered on lettuce and cucurbit vegetables . Pending use on almonds, banana, citrus, grape, tomato, cotton, peach, pear, snap bean, lychee, avocado and pistachio. Potential use on other stone fruit, other pome fruit, okra, and tropical fruit crops.*
Chlorfenapyr (PYLONGA)	*BASF*	*Pyrrole*	*Controls selective leptopteran larva, mites, some aphids, thrips, scale, leafinors*	*Pending use on greenhouse tomato and greenhouse pepper*
Chromafenozide (MATRIC)	*Nippon Kayaku and Sankyo*	*Insect Growth Regulator*	*Specific to lepidopteran pests, novel ecodyosone agonist.*	*Potential use of apple, cotton, shallot, rice, tea, soybeans, and other fruit and vegetables.*
Cinnamaldehyde (CINNACURE) (CINNAMITE)	*Proguard*	*Natural Product*	*Aphids, mites and the diseases downy mildew, powdery mildew, botrytis, and brown rots.*	***Biopesticide**. Registered on avocado, peppermint, spearmint, banana, dates, figs, mangoes, papayas, beet greens, chicory, artichokes, blueberry, raspberry, blackberry, gooseberry, currant, Brassica vegetables, bulb vegetables, cereal grains, citrus, cranberry, grape strawberry, cucurbit vegetable, fruiting vegetables, herbs and spice, hop, sweet corn, pop corn, kiwifruit, leafy vegetabless, legume vegetables, pasture grass, alfalfa, pistachio, persimmon, pome fruit, soybean, stone fruit, meadowfoam, safflower, and tree nuts.*
Cinnamon Oil (VALERO)	*Emerald Bioagriculture*	*Natural Product*	*Controls mites and other insects*	*Potential use on grapes, strawberry, and sweet potato.*
Clofentezine (APOLLO)	*Makhteshim-Agin*	*Tetrazine*	*Acaricide for eggs of Panonychus ulmi and Tetranychus spp.*	*Registered on apple, pear, apricot, cherry, peach, nectarine, almond, walnut. Pending use on grape and persimmon.*
Clothianidin	*Takada*	*Neo-nicitinoid*	*Contact and stomach activity, control spectrum similar to imidacloprid.*	***Candidate Reduced Risk and OP replacement.** Pending use on apple and pear. Potential use on potato, Brassica leafy vegetables, tomato, pepper, cucurbit vegetables, leafy vegetables, tobacco, cotton, and grape.*
Cydia pomonella granulose virus (VIROSOFT CP4) (GRANUPOM)	*Biotepp and Biobest*	*Granulosis Virus*	*Controls Codling moth*	***Biopesticide.** Registered on apple*
Cyfluthrin (BAYTHROID)	*Bayer*	*Pyrethroid*	*Controls cabbage looper, potato leafhopper, Colorado potato beetle, European corn borer, flea beetle, potato tuberworm, citrus thrips.*	*Registered on potato, sweet corn, pepper, tomato, citrus, cotton, alfalfa, radish, sorghum, sugarcane, carrot, sunflower and hop. Pending uses on Brassica leafy vegetables, soybean, field corn, cereals grains, Southern pea, dry pea, garbanzo bean, pigeon pea, chickpea, grape and lentil.*
Cypermethrin (AMMO)	*FMC*	*Pyrethroid*	*Activity on cutworms, thrips, leaf hopper, weevels, armyworms, lygus bug, plant bugs, corn earworm, aphids, and beetles.*	*Registered on cotton, pecans, head lettuce, potato, bulb vegetables, and Brassica leafy vegetables.*
Cyromazine	*Syngenta*	*Triazine with insecticide*	*Leafminers, maggots, fungal gnats.*	*Registered on cotton, celery, cucurbit vegetables, leafy vegetables, mushroom, pepper,*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(TRIGARD)		*growth regulator activity*		*tomato, lima bean, bulb onion, green onion, potato, Chinese cabbage, Chinese mustard, radish, and sweet corn. Pending use on blackeye, mango, and snap bean.*
DBI-3204	*Dongbu Hannong*	*Benzoylphenyl urea*	*Active against lepidopteran pests, whitefly. It acts by inhabiting chitin synthesis*	*Potential use on apple, Brassica leafy vegetables, tomato, persimmon and other fruit and vegetables.*
Deltamethrin (DECIS)	*Aventis*	*Pyrethroid*	*Beetles, bugs, Lepidoptera*	***OP Alternative**. Registered on cotton. Pending use on bulb vegetables, barley, cucurbit vegetables, Brassica leaf vegetables, leafy vegetables, fruiting vegetables, root and tuber vegetables, artichoke, tree nuts, stone fruit, pome fruit, field corn, sorghum, soybean, sunflower, wheat, sweet corn, flax and popcorn. Potential use on olive.*
Diflubenzuron (DIMILIN)	*Uniroyal*	*Substituted benzoylurea, Insect Growth Regulator*	*Wide range of leaf feeding insects.*	*Registered on citrus, artichoke, mushrooms, soybean, cotton, walnut, rice and rangegrass. Pending use on pear. Potential use on rhubarb, nut crops, and stone fruit.*
Emamectin Benzoate (PROCLAIM) (STRATEGY) (DENIM)	*Syngenta*	*Synthetic Avermectin analogue*	*Effective on larval Lepidoptera (Beet/fall armyworms, cabbage webworms, corn earworms, imported cabbage worm, cabbage looper) and leafminers*	***OP Alternative.** Registered on head and stem Brassica vegetables, head lettuce and celery. Pending use on fruiting vegetables, other leafy vegetables, leafy Brassica, and cotton. Potential use on cucurbit vegetables, pome fruit and tree nuts.*
Esfenvalerate (ASANA)	*DuPont*	*Pyrethroid*	*Broad spectrum control on numerous insect pests*	*Registered on cotton, field corn, pop corn, peanut, soybeanm sugarcane, sunflower, apple, stone fruits, pear, almonds, filberts, pecans, walnut, artichoke, head and stem Brassica, carrot, collard, cucumbers, melons, punpkin, squash, snap beans, dry beans, dry pea, lentil, eggplant, succulent pea, pepper, potato, radish, sweet corn, and tomato. Pending on pistachio, celery, Brussel sprouts, bok choy, sweet potatoes, cardoon, and canola,.*
Ethiprole	*Aventis*	*Phenylpyrazole*	*Broadspectrum activity against sucking insects*	*Potential use on rice and other crops*
Etoxazole (BAROQUE) (ZOOM)	*Valent (Yashima)*	*Oxazoline*	*Insecticide/acaricide for control of Panonychus spp and Tetranychus spp, including hexythiazox resistant mite strains. Inhibition of molting, effective on eggs, larvae, & nymphs.*	*Pending use on cotton, strawberry, apple, pear, almond, pecan, and grape. Potential use on hop, seed alfalfa, beans, cucurbits, sweet corn, mint, tropical fruits and other tree nuts. Registered in Japan on fruit crops.*
Fenoxycarb (COMPLY)	*Syngenta*	*Non-neurotoxic carbamate - IGR*	*Fire ants and a wide range of other insects.*	*Pending use on pome fruits, tree nuts, pasture and citrus.*
Fenpropathrin (DANITOL)	*Valent*	*Pyrethroid*	*Aphids, whitefly, various worms, mites, glassy winged sharpshooter, and stinkbugs.*	*Registered on cotton, tomato, strawberry, peanuts, squash, cucumbers, grape, pome fruit, citrus, melon, and head/stem Brassica. Pending use on currant and soybean. Potential use on pepper, eggplant, dried pea and succulent pea.*
Fenpyroximate (FUJIMITE)	*Nichino America*	*Phenoxypyrazole*	*Controls mites, including two-spotted, European, red and citrus rust mite, and psylla.*	***Reduced Risk Product**. Pending use on cotton, apple, pear, grape, and hop. Potential use on grass, citrus, almond, strawberry, peach, cherry, watermelon, melon, and tomato.*
Fipronil (REGENT) (ICON)	*Aventis*	*Phenylpyrazole - A broad spectrum neurotoxin, unique mode of action*	*Controls Coleoptera, Lepidoptera, Diptera, Homoptera, Isoptera, and Thysanoptera. Systemic activity, with long residual.*	*Registered as seed treatment on rice and in furrow treatment on corn. Pending foliar use on cotton, potato, sweet potato, plantain and seed treatment use on bulb onion and corn. Potential use on pepper, apple, cherry, and blueberry.*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Flufenzin	*Chinoin*		*Acaricide*	*Unknown status on apple, grapes, citrus, cotton and vegetable crops.*
GALAXY V4C	*Analytica*	*Viral Insecticide*		*Pending use on Brassica leafy vegetables, soybeans, cotton and cereal grains*
Hexythiazox (SAVEY)	*Gowan*	*Carboxamide*	*Mites*	*Registered on apples, pears, hops, seed alfalfa, almond, stone fruits, strawberry, cotton, tree nuts, pistachio, peppermint, spearmint and caneberry. Pending on date.*
Hydramethylnon (AMDRO)	*BASF*	*Amidinohydrazone*	*Slow acting insecticide, formulated as a bait that is effective on ants*	*Registered on grass. Pending use on pineapple.*
IKI 220	*ISK Biosciences*	*trifluoromethyl-nicotinamide*	*Effective against aphids and other sucking pests. Provides rapid anti-feeding activity*	*Potential use in potato, cereals, pome fruit, stone fruit and vegetables.*
Imidacloprid (ADMIRE) (PROVADO) (GAUCHO) (MARATHON II)	*Bayer*	*chloronicotinyl*	*Primarily effective against sucking insects (aphid, whitefly, scale, etc.) as well as beetles and grubs. Controls numerous pests which are resistant to insecticides.*	***OP Alternative**. Registered on cotton, potato, fruiting vegetables, Brassica leafy vegetables, leafy vegetables, canola, grapes, hops, mango, pome fruit, cucurbit vegetbles, tuberous and corm vegetables, upland watercress, field corn, pecan, edible legumes, celery, citrus, cilantro, sweet corn, turnip greens, strawberry, beet greens and greenhouse vegetables, and sugarbeet. Pending use on peach, blueberry, and herbs. Potential use on avocado, carrot, coffee, okra, passion fruit, radish, rutabaga, banana, guava, and peanut*
Indoxacarb (AVAUNT) (STEWARD)	*DuPont*	*Oxadiazine- Unique mode of action which inhibits sodium ion entry into nerve cells.*	*Controls most major Lepidopteran pest species. Possibly controls plant bugs. Soft on beneficials so it is a good fit with IPM.*	***Reduced Risk Product.** Registered on apple, pear, Brassica leafy vegetables, cotton, fruiting vegetables, lettuce, and sweet corn. Pending use on sugarbeet.*
Iron Phosphate (SLUGGO)	*W. Neudoff*	*Iron salt*	*Slugs and snails*	***Biopesticide.** Registered on strawberry, caneberry, cantaloupe, cucumbers, squash, eggplant, and asparagus.*
Jojoba Oil (DETUR/E-RASE]	*IJO Products*	*Natural Product*	*Controls whitefly and powdery mildew*	*Registered on grape.*
Kaolin (SURROUND)	*Engelhard Corportation*	*Clay*	*Various insect and mite pest.*	***Biopesticide.** Registered on apple, pear, stone fruit, citrus, caneberry, blueberry, grape, fruiting vegetables, onion, and cucurbit vegetables.*
lambda-Cyhalothrin (KARATE) (WARRIOR)	*Syngenta*	*Pyrethroid*	*Broad spectrum insect control*	***OP Alternative.** Registered on Brassica leafy vegetables, field corn, pop corn, sweet corn, cotton, head lettuce, bulb vegetables, peanut, rice, sorghum, soybean, sunflower, tomato, tomatililos, wheat/triticale. Pending on alfalfa, avocado, beans, canola, chickpea, eggplant, flax, ground cherry, pea, pepper, small grains, sugarcane, stone fruit, pome fruit, and tree nuts.*
Lufenuron (MATCH)	*Syngenta*	*Benzoylurea (IGR chitin inhibitor)*	*Whitefly, thrips, Colorado potato beetle, and lepidopterous insects.*	*Potential use on vegetables and cotton. Registered in Japan and Italy.*
Metarhizium anisopliae (GREENGUARD)	*Bio-Care*	*Metarhizium anisopliae*	*Locust*	***Biopesticide.** Potential use on sugarcane*
Metarhizium anisopliae (TAERAIN)	*Taensa*	*Metarhizium anisopliae*	*Controls whitefly, thrips, and mites.*	*Potential use on vegetables, fruit and nut trees.*
Methoxyfenozide	*Dow*	*Diacylhydrazine - (Molt*	*Similar to tebufenozide in that it only*	***Reduced Risk Product and OP Alternative**. Registered on Pome fruits, cotton, Brassica*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(INTREPID) (RUNNER)	*AgroSciences*	*accelerating compound)*	*controls Lepidoptera larvae. Better on budworm/bollworm, leafminer and diamondback moth. Excellent fit with IPM programs.*	*leafy vegetables, Fruiting vegetables, and Leafy vegetables. Pending on field corn, sweet corn, grape and stone fruit. Potential use on Cucurbit vegetables, Citrus fruit, rice, cranberry, artichoke, lychee, sugarbeet, cotton, radish, edible legumes, strawberry and mint*
Milbemectin (KOROMITE)	*Sankyo & Gowan*	*Macrocylic lactone*	*Excellent miticide, also controls aphids, leafminers, thrips, leafhoppers*	***Reduced Risk Product and OP Alternative**. Pending use on pome fruit, citrus fruit, non-bearing stone fruit and strawberry. Potential use on tree nuts, bearing stone fruit, hops and cotton.*
Novaluron (RIMON 10 EC) (RIMON 7.5% WDG)	*Makhteshim-Agan & Uniroyal*	*Insect Growth Regulator (chitin synthesis inhibitor)*	*Effective against Lepidoptera, mealy bugs, silver leaf whitefly, Western flower thrips, leaf miner, and some mites. Strictly a contact material, no systemic activity.*	***Candidate Reduced Risk Product**. Pending on cotton and Pome fruit. Potential use on Stone fruit, potato, corn, Citrus fruit, sweet potato, snap beans, and caneberry. Registered internationally.*
PAVOIS Granulosis virus	*Bayer*	*Carpocapsa spp.*	*Product controls two generations of susceptible insects*	*Potential use on pome fruit and walnut (international registrations approved)*
Pymetrozine (FULFILL)	*Syngenta*	*Pyridine azomethine*	*Controls sucking insects (aphids/whiteflies). The product has a rapid knockdown on aphids if they are contacted by direct sprays.*	***Reduced Risk Product and OP Alternative**. Registered on fruiting vegetables, cucurbit vegetables and tuberous/corm vegetables. Pending use on leafy vegetables, hops, Brassica vegetables, cotton, pecan, and asparagus.*
Pyridaben (PYRAMITE)	*BASF*	*Pyridazinone*	*Activity on mite, whiteflies, aphids, mealybugs, leafhoppers, and thrips. A new class of insecticide offering long term residual control. Good for IPM/ resistance management.*	*Registered on almonds, apples, citrus, pears, tree nuts/pistachio stone fruit, grape and cranberry. Potential use on guava, strawberry, papaya, and hops.*
Pyriproxyfen (KNACK) (DISTANCE) (ESTEEM)	*Valent*	*Pyridine (IGR-selective juvenile hormone analog)*	*Controls scales, whiteflies, thrips, pear psylla, codling moth, and ants. It is a juvenile hormone mimic that is slow acting with a long residual, safe to beneficial insects, non-toxic to man and wildlife. Effective on eggs and immature stages, not effective on adults. Excellent for IPM programs.*	***Reduced Risk Product and OP Alternative**. Registered on cotton, pome fruit, citrus, fruiting vegetables, and tree nuts. Pending use on stone fruit, cucurbit vegetables, Brassica vegetables, olives, edible legumes, blueberry, lychee, sugar apple, greenhouse tomato, okra, grape, and pistachio.*
S-1812	*Valent*		*Good activity against lepidoptera. Effective against insecticide resistant insects. Safe on beneficials.*	*Potential use on cotton, and fruiting vegetables. (Submission to EPA in 2001/ 2002).*
Spinosad (SUCCESS) (SPINTOR)	*Dow AgroScience*	*Macrocyclic lactone*	*Controls Coleoptera, Diptera, Hymenoptera, Isoptera, Lepidoptera, Thysanoptera, Siphonoptera, and mites. Has low environmental impact, good residual activity, and is safe to many beneficial insects making it ideal for use in IPM programs.*	***Reduced Risk Product and OP Alternative**. Registered on cotton, almonds, pistachio, apple, cereal grains, citrus, fruiting vegetables, leafy vegetables, Brassica leafy vegetables, potato, other tuberous and corm vegetables, edible legumes, soybean, cucurbit, stone fruit, corn, sweet corn, sorghum., beans, peas, tropical fruit, and ti palm. Pending on artichoke, asparagus, other pome fruit, other tree nuts, banana, coffee, grape, sugarbeet and other root and tuber vegetables, bulb vegetables, blueberry and other berries, herbs, peanuts, strawberry, mint, grass, non-grass animal feeds, turnip greens, cilantro, and watercress.*
Spirodiclofen	*Bayer*	*Tetronic acid*	*Acaricide that is very active on eggs,*	*Potential use on citrus fruit, pome fruit, stone fruit, grape, and tree nuts.*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(BAJ 2740) (ENVIDOR)			*larvae, and quiescent stage of Panonychus, Phyllocoptruta, Brevipalpus, Tetranychus species .*	
Spodoptera exigua Nuclear Polyhedral virus	*Biosys*	*Viral Insecticide*	*Spodoptera larvae*	***Biopesticide.***
Sucrose Octanoate Esters		*Biochemical Sugar*	*Being evaluated for control for glassy-winged sharpshooter*	*Pending use on grape. Potential use on all crops.*
Tebufenozide (CONFIRM) (RH-5992)	*Dow AgroSciences*	*Diacylhydrazine – (Molt accelerating compound)*	*Controls only Lepidoptera larvae. Safe to beneficial insects with low environmental impact. Excellent for IPM programs.*	***Reduced Risk Product and OP Alternative**. Registered on pome fruit, cotton, walnuts, pecans, blueberries, caneberry, cranberries, mint, fruiting vegetables, leafy vegetables, Brassica leafy vegetables, sugarcane, turnips, canola, sugarcane, and tree nuts/pistachio. Pending use on grape, soybean, sweet potato, lychee, longan, peanuts, rice, sugar beet, grass, legume vegetables, sunflower, garden beets, non-grass animal feeds and citrus fruit.*
Tebupirimphos (AZTEC) *A combination product with cyfluthrin*	*Amvac*	*Organophosphate*	*A soil insecticide, active against a wide range of insets, including corn rootworm, wireworm, white grub and seed corn maggot.*	*Registered on field, sweet and pop corn. Potential use on sugarcane, sweet potato and cabbage*
Tefluthrin (FORCE)	*Syngenta*	*Pyrethroid*	*Controls a wide range of soil insects including rootworms, cutworms, wireworms and grubs.*	*Registered on field corn, pop corn and sweet corn*
Thiamethoxam (ACTARA) (PLATINUM) (ADAGE 5 FS) (CENTRIC)	*Syngenta*	*Second generation neonicotinoid. Systemic in plant by root uptake and transport in xylem*	*Broad-spectrum activity against soil dwelling, sucking and some chewing pests. Effective against aphids, whitefly, thrips, leafhopper and certain beetles. Being marketed for seed, soil and foliar treatments.*	***OP Alternative.** Registered as seed treatment use on barley, cotton, wheat, canola, and sorghum. Registered as foliar use on fruiting vegetables, cucurbit vegetables, pome fruits, potato and other tuberous/corm vegetables, tobacco and cotton. Pending use on citrus, Brassica vegetables, leafy vegetables, corn, sunflower, and peanut. Potential use on grapes, strawberry, edible legume, carrot, radish, stone fruits, mint, blueberry and cranberry.*
Thiacloprid (CALYPSO) (ALANTO)	*Bayer*	*Second generation neonicotiniod.*	*Broad spectrum systemic control of sucking and chewing pests including aphids, whiteflies, leafhoppers, plant bugs, pear psylla, weevils, fruit flies, oriental fruit moth, leafminers and codling moth. Very safe to bees.*	*Pending use on cotton, apple and pear. Potential use on potato, grape, cucurbit vegetables, peppers, rice, and nut crops.*
Thymol (APR LIFE VAR)		*Thyme oil*	*Used to control varroa mites on bees*	***Biopesticide.** Pending use on honey and bees wax.*
Tolylfluanid (EUPAREN MULTI)	*Bayer*	*Sulfenamide*	*Major targets are fungal pathogens (Fungicides). Also controls mites.*	*Potential use on apples, grapes and hops..*
Triazamate (APHISTAR)	*Dow AgroSciences*	*Carbamate*	*Controls resistant foliar and root aphids as well as aphids. Safe to beneficial insects and bees, and has good potential for use in IPM .*	*Pending use on pome fruit, leafy vegetables, cotton, Brassica leafy vegetables, sugarbeet and hop.*
VIROSOFT Viral	*Biotepp*	*Mamestra configurata*	*Can be applied as a preventative*	***Biopesticide**. Registered on canola.*

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Insecticide		*Granulosis virus*	*treatment at planting or a curative foliar treatment for bertha armyworm*	
Zeta-cypermethrin (FURY) (MUSTANG)	*FMC*	*Pyrethroid*	*Controls cutworms, thrips, and armyworms, ect.*	***OP Alternative.*** *Registered on cotton, cabbage, head lettuce, bulb onion, garlic and shallot, and pecan. Pending use on sugar beet, sugarcane, field corn, pop corn, green onion, alfalfa, sweet corn, other Brassica leafy vegetables, other leafy vegetables, rice, wheat, sorghum, tomato, pepper, peas, beans, barley and soybeans.*

FUNGICIDES

Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
AC 382042	*BASF*	*Phenoxyamide*	*Systemic protectant fungicide for control of rice blast*	*Unknown status on rice. Registration expected in Japan in 2001*
AE C638206	*Aventis*	*Acylpicolide (new chemistry, no cross resistance to strobilurins, phenylamides and cymoxanil)*	*Active against Phytophthora, Pythium, Plasmopora, Peronospora, Bremia and Pseudoperonospora.*	***Candidate Reduced Risk Product.*** *Pending use on root and tuber vegetables, Brassica leafy vegetables, leafy vegetables, bulb vegetables, fruiting vegetables and cucurbit vegetables. Potential use on hops.*
Acibenzolar (ACTIGARD)	*Syngenta*	*Benzothiadiazole, (Systemic Aquired Resistance Inducer)*	*Induces resistance to Blue mold, bacterial diseases, Downy Mildew, Sclerotinia*	***Reduced Risk Product. Registered*** *on fruiting vegetables, Brassica leafy vegetables, leafy vegetables, banana, and tobacco. Pending use on cucurbit vegetables and wheat.*
Ampelomyces quisqualis isolate M-10 (AQ 10)	*Ecogen*	*Fungus*	*Hyperparasite of Powdery mildew*	***Biopesticide****. Pending registration on all crops.*
Aspergillis flavus AF 36	*USDA*	*Fungus*	*Competitive inhibition of aflatoxin, production by natural Aspergillis strain*	***Biopesticide****. Pending use on cotton*
Azoxystrobin (HERITAGE) (QUADRIS) (ABOUND)	*Syngenta*	*Strobilurin*	*Broad spectrum of pathogens of fungi: Cladosporium, Venturia, Botryosphaeria, Mycosphaerella, Pyrenophora, Puccinia, Pyricularia, Plasmopara, Guignardis, Pseudopeziza, Alternaria, Sphaerotheca, Erysiphe, Leveillula, Septoria, Pythium, Uncinula, Didymella, Sclerotium, Colletotrichum, Mycosphaerella, Phytophthora, Rhynchosporium, cladosporium, Rhizoctonia etc.*	***Reduced Risk Product.*** *Registered on tree nuts and pistachio, Cucurbit Vegetables, Stone Fruits, banana, canola, grape, peanut, pecan, potato, rice, tomato, wheat, barley, citrus, coriander leaves, field, popcorn and sweet corn, cotton, dry bulb onion, green onion, other bulb vegetables, cucurbit vegetables, peanut, soybean, leafy vegetables, and root and tuber vegetables. Pending use on strawberry, cranberry, Edible Legumes, Herbs, Brassica leafy vegetables, seed grass, watercress, pepper, chickpea, blueberry and other bushberry, lingonberry, juneberry, salal, mint, caneberry, pistachio, artichoke, asparagus, avocado, guava, persimmon, jackfruit, paw paw, tamarind, lychee, loquat and other tropical fruits, turnip greens, pepper, eggplant, okra and citrus (post harvest use).*
Bacillus pumilus strain 2808 (SONATA AS)	*AgraQuest*	*Bacteria*	*Botrytis*	***Biopesticide.*** *Pending use on Brassica leafy vegetables, bulb vegetables, cereal grains, cucurbit vegetables, fruiting vegetables, grape, grass and grass seed, hop, leafy vegetables, legume vegetables, mint, peanut, pome fruit, root/tuberous vegetables, strawberry and stone fruit. Potential use on all crops.*
Bacillus subtilis strain QST 713 (SERENADE) (RHAPSODY)	*AgraQuest*	*Bacteria*	*Protectent fungicide/bactericide with SAR activity. Broad spectrum,controls Botrytis, powdery and downy mildews, early blight, bacterial spot.*	***Biopesticide****. Registered on grape, cucurbit vegetables, leafy vegetables, pepper, tomato, cherry, walnut, hop, peanut, and potato. Potential uses on apple, pear and other fruits, nut and vegetables.*
Bacillus subtilis (TAEGRO)	*Taensa*	*Bacteria*	*Disease suppression*	*Potential use on vegetables and potato*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Bacteriophages (AGRIPHAGE)	*Agriophi*		*Manages bacteria spot and bacteria speck*	***Biopesticide**. Pending use on tomato and pepper*
BAS 510 (HONOR)	*BASF*	*Oxathaiin*	*Primary activity on Botrytis, Sclerotinia and Monilinia.*	***Reduced Risk Product**. Pending use on beans, peanut, potato, fruiting vegetables, head and leaf lettuce, canola, tree nuts, carrot, grape, onion, stone fruit strawberry, celery, spinach and berry crops.*
BAS 516	*BASF*	*Not disclosed*	*Broad spectrum activity on Anthracnose, Alternaria, downy mildew, powdery mildew, Botrytis, Sclerotinia and Monilinia.*	***Candidate Reduced Risk Product**. Pending use on grape, potato, carrot and other root vegetables, bulb vegetables, stone fruit, tree nuts/pistachio, strawberry, berry crops, celery and spinach.*
Benthiavalicarb (KIF-230)	*Bayer & Kumiai*		*Controls downy mildew*	*Potential use on Brassica leafy vegetables, leafy vegetables, fruiting vegetables, cucurbit vegetables, potato and grape.*
Candida oleophila	*Ecogen*	*Fungus*	*Post-harvest diseases*	***Biopesticide**. Potential use in fruit crops*
Chitosan (ELEXA-4)	*SafeScience*	*Carbohydrate-Chitin based product, plant defensive booster*	*Downy and powdery mildew, gray mold and botrytis..*	***Biopesticide. Registered** on grapes, strawberry, tomato, pome fruit, stone fruit, cucurbit vegetables, and grapes. Pending use on other fruiting vegetables.*
Cinnamaldehyde (CINNACURE) (CINNAMITE)	*Proguard*	*Natural Product*	*Downy mildew, powdery mildew, botrytis, brown rots, aphids and mites*	***Biopesticide**. Registered on avocado, peppermint, spearmint, banana, dates, figs, mangoes, papayas, beet greens, chicory, artichokes, blueberry, raspberry, blackberry, gooseberry, currant, Brassica vegetables, bulb vegetables, cereal grains, citrus, cranberry, grape strawberry, cucurbit vegetable, fruiting vegetables, herbs and spice, hop, sweet corn, pop corn, kiwifruit, leafy vegetables, legume vegetables, pasture grass, alfalfa, pistachio, persimmon, pome fruit, soybean, stone fruit, meadowfoam, safflower, and tree nuts.*
Coninthyrium minitans (CONTANS WG)	*Prophyta Encore Technologies*	*Fungus*	*Controls Sclerotinia sclerotium and S. minor*	***Biopesticide**. Registered on peanut. Pending use on canola, lettuce, endive, celery, and beans. Potential use on sunflower, pea, chicory, and carrot.*
Copper Octanoate (NEU 1140F)	*W. Neudorff*	*Copper Octanoate*	*Downy mildew, powdery mildew, blue mold, white rust, anthracnose*	*Registered on beans, peas, beets, broccoli, Brussel sprouts, cantaloupes, cucumbers, pumpkins, squash, carrot, celeriac, celery chicory, chive, corn, currant, gooseberry, eggplant, pepper, tomato, endive, lettuce, garlic, leek, onion, shallots, ginseng, grape, hop, kale, kohlrabi, potato, quince, spinach, chard, strawberry, sunflowers, and turnip*
Cyazofamid (BAS 545F) (RANMAN)	*ISK Biosciences and BASF*	*Cyanoimidazole - Inhibitor of mitrochondrial electronic transport*	*Effective against Oomycete and Plasmodiophoromycetes fungi, especially late blight and downy mildew*	*Potential use on potato, grape, tomato, cucurbit vegetables, onions, lettuce, Chinese cabbage and rice.*
Cymoxanil (CURZATE)	*DuPont*	*Acetamide*	*Downy mildew, late blight, Phytophthora, Plasmopara, Pseudoperonospora Bremia, and Peronospora. Should be mixed with other fungicides for resistance management.*	*Registered on potato and tomato. Pending use on hop. Potential use on lychee.*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Cyproconazole (ALTO)	*Syngenta*	*Triazole*	*Coffee rust*	*Registered on coffee*
Cyprodinil (VANGARD)	*Syngenta*	*Anilinopyrimidine*	*Ascomycetes and Deuteromycetes such as: Botrytis, Alternaria, Monilinia, Venturia, Pseudocerosporella, Pyrenophora, Septoria, Erisyphe, Erysiphe, Rhynchosporium Glomerella, Coccomyces, Colletotrichum*	***Reduced Risk Product**. Registered on almonds, grapes, pome and stone fruit. Pending use on pistachio and caneberry.*
Cyprodinil/Fludioxonil (SWITCH)	*Syngenta*	*Anilinopyrimidine and Phenylpyrrole*	*Controls Botrytis, Alternaria and brown rot*	***Reduced Risk Product.** Pending use on grape, strawberry, bulb onion, green onion sweet corn, pistachio and caneberry. Potential use on caneberry, carrot, Brassica leafy vegetables, pear, herbs, lychee, watercress, lettuce, beans (dry, snap, lima).*
2DADS	*UAP*	*Diallyl sulfides*	*White rot*	*Pending on onion, garlic and shallot*
Difenoconazole (DIVIDEND)	*Syngenta*	*Triazole*	*Smuts, bunts, Aspergillis, Fusarium, Penicillium, Septoria, Cochliobolus, Pyrenophora, Pseudocercosporella, and Gaeumannomyces*	*Registered on banana, wheat, barley, and rye as seed treatment and canola. Pending use on sweet corn and yam (seed piece treatment).*
Dimethomorph (ACROBAT)	*BASF*	*Cinnamic acid derivative*	*Downy mildew, late blight, Phytophthora, Plasmopara, Pseudoperonospora Bremia, and Peronospora. Should be mixed with other fungicides for resistance managemnt.*	*Registered on potato, hop, grape, and tomato. Pending use on lettuce, cucurbit vegetables, taro, onion, cereals, and pepper. Potential use on Brassica leafy vegetables.*
Dithianon (DELAN)	*BASF*	*Quinone*	*Scab, downy mildew, rust, leaf spot,*	*Pending on pome fruit and hop*
Epoxiconazole (OPUS)	*BASF*	*Triazole*	*Leaf spots, powdery mildew, black spots*	*Pending use on banana*
Ethaboxam (GUARDIAN)	*L G Chemicals*	*Thiazole carboxamide*	*Useful for grape downy mildew, potato and tomato late blight, pepper blight and cucumber downy mildew. Preventive and curative activity*	*Potential use on grapes, potato, fruiting vegetables, cucurbits vegetables, Brassica leafy vegetables, leafy vegetables, edible legumes and other crops.*
Famoxadone (FAMOXATE) (CHARISMA)	*DuPont*	*Oxazolidinedione*	*Broad spectrum fungicide, including Early blight, downy mildews and other ascomycetes. Can be combined with cymoxanil (marketed as TANOS) to pick up late blight.*	***Candidate Reduced Risk Product.** Pending use on potato, fruiting vegetables, grapes, cereals, cucurbits, head lettuce, and hop. Potential use on leafy Brassica and onion*
Fenamidone (REASON)	*Aventis*	*Imidazolinone (Respiration Inhibitor)*	*Foliar protectant and curative activity against Oomycete fungi. Also effective against ascomycete and Alternaria. Inhibits electronic transport*	***Candidate Reduced Risk Product.** Pending use on potato, tomato, onions, cucurbit vegetables and lettuce. Potential use on pepper and fruiting vegetables, Citrus fruits, Brassica leafy vegetables, other leafy vegetables, grapes, and sunflower.*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Fenbuconazole (INDAR) (ENABLE)	*Dow AgroSciences*	*Triazole*	*Powdery mildew, rusts, apple scab, brown rot, cotton ball, mummy berry (Monilinia spp.), smuts, bunts, Cladosporium, Myclosphaerella, Cercospora, Septoria, Rhizoctonia, Pyrenophora, Helminthosporium & related genera, and a Colletotrichum sp. - in turf.*	*Registered on pecans, bananas and stone fruit (except plum). Pending use on grapefruit, blueberry, cranberry and pepper.*
Fenhexamid (ELEVATE)	*Tomen Agro*	*Hydroxyanilide*	*Non-systemic protectant fungicide that is effective against Botrytis cinerea, Monilina, Sclerotina sclerotiorum of lettuce.*	***Reduced Risk Product.*** *Registered on grape, strawberry, almond and stone fruit. Pending use on fruiting vegetables, caneberry, blueberry, citrus, and post harvest uses on stone fruit, pome fruit, and kiwifruit.*
Fenpropimorph	*BASF*	*Morpholine*	*Controls powdery mildew, rust, Helminthosporium, Rhyncosporium, Septoria, etc.*	*Potential use on banana, sugar beet and cereals (international registrations)*
Fluazinam (OMEGA)	*Syngenta & ISK*	*Pyridinamine*	*Broad spectrum disease control: Alternaria, Botrytis, Cladosporium, Colletotrichum, Phytophthora, Plasmopara, Rhizoctonia, Sclerotinia, Venturia, Streptomyces, and some mites.*	***Reduced Risk Product****. Pending use on peanut, potato and grape. Potential use on edible legumes, strawberry, lettuce, onion, citrus, and pome fruit*
Fludioxonil (MAXIM) (SCHOLAR)	*Syngenta*	*Phenylpyrrole*	*Fusarium, Helminthosporium, Rhizoctonia, Aspergillus, Alternaria, Ascochyt, Pyrenophora, Tilletia, Sclerotinia, and Septoria*	***Reduced Risk Product****. Registered on most crops as seed treatment. Pending post harvest use on stone fruit, kiwifruit, pome fruit, and citrus and drip irrigation application on cantaloupe and watermelon.*
Fluquinconazole (JOCKEY) (CASTELLAN)	*Aventis*	*Triazole*	*Controls Take-All, rust, and a wide range of Ascomycetes diseases.*	*Potential use in cereals (pending international use).*
Flutolanil (MONOCUT)	*Gowan and Nichino America*	*Benzamide*	*Rusts, sheath blight, damping off, and other diseases caused by Rhizoctonia, and Verticillium*	*Registered on rice, ~~. Pending use on~~ peanut and potato.*
Fosetyl-AL (ALIETTE)	*Aventis*	*Aluminum phosphate*	*Controls Phytophthora diseases, Alternaria diseases and Downy mildew.*	*Registered on asparagus, avocado, blueberry, Brassica leafy vegetables, caneberry, citrus, cucurbits, ginseng, hops, leafy vegetables, pineapple, bulb onions, pome fruit, strawberry, tomato, banana, grape cranberry and macadamia. Pending on succulent pea, bushberry, leek, green onion, turnip roots and turnip greens.*
Gliocladium catenulatum Strain J1446 (PRESTOP)	*Kemira Agro*	*Fungus*	*Recommended for control of Pythium and Rhizoctonia*	***Biopesticide.*** *Registered on numerous vegetable crops*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Harpin Protein (MESSENGER)	*Eden Bioscience*	*Protein which switches natural plant defenses in plant*	*Bacterial leaf spot, bacteria wilt, bacteria blight and certain fungal diseases*	***Biopesticide and Methyl Bromide Replacement.*** *Registered on tomato, pepper, wheat, strawberry, grape, cucumber, melon, rice, and apple. Pending use on banana, cotton, peanut, and rice. Potential use on all other crops. Product is currently being marketed only in selective geographic regions until additional efficacy data are developed*
Hexaconazole (PROSEED)	*Syngenta*	*Triazole*	*Controls loose smut and common root rot via seed treatment*	*Potential use on wheat and barley (International registration)*
Hydrogen peroxide (OXIDATE)	*Bio Safe Systems*	*Hydrogen peroxide*	*Broad spectrum bactericide and fungicide*	*Pending use on beans, Brassica vegetables, citrus fruits, cucurbits, onions, peppers, tomato, apple, filbert, banana, grape, and stone fruit.*
Hymexazol	*Sankyo*	*Azole*	*Seed rot, Aphanomyces*	*Registered on sugarbeet. Potential use on pea.*
Iprovalicarb (MELODY)	*Bayer/Tomen Agro*	*Amino-acid amide carbamate*	*Activity on oomycete fungi, downy mildew, and Phytophthora*	*Potential use on grape, potato, tomato, cucumber, lettuce, avocado, citrus*
Kresoxim-methyl (SOVRAN) (CYGNUS)	*BASF*	*Strobilurin*	*Mildews, Septoria, Rusts, Scab, Phomopsis, Black Rot. Provides protectant, currative and eradicant control of powdery mildew*	*Registered on pome fruit, grapes, and pecans. Pending use on cucurbits, cereals, sugarbeet, and potato*
Mefenoxam (RIDOMIL GOLD)	*Syngenta & Nufarm*	*Active isomer of metalaxyl*	*Same spectrum as metalaxyl*	***Reduced Risk Product****. Registered on alfalfa, almonds, apple, asparagus, avocado, beets, blueberry, Brassica leafy vegetables, cereals, citrus, clover, cotton, cranberry, cucurbits, fruiting vegetables, ginseng, grape, grass, hop, leafy vegetables, edible legumes, bulb onion, green onion, papaya, peanut, pineapple, raspberry, root and tuber vegetables, soybean, stone fruit, strawberry, sunflower, walnuts. Pending use on artichoke, atemoya, carambola, herbs, kiwifruit, lingonberry, fresh mint, sugar apple, custard apple, caimito, canistel, canola, mamey sapote, mango, sapodilla, black sapote,sweetsop, papaya and canola*
Mepanipyrim (FRUPICA)	*Kumiai*	*Anilinopyrimidine*	*Controls Botrytis. Mostly a preventive material, but has curative properties.*	*Potential use on grape, tomato and strawberry. (International registrations approved)*
Metconazole (CARAMBA)	*BASF Kureha*	*Triazole*	*Broad spectrum*	*Potential use on cereals and canola (internation registrations approved)*
MILSANA Bioprotectant	*KHH BioScience*	*Extract from giant knotweed*	*Induces phytoalexins which confer resistance to powdery mildew and other diseases such as Botyritis.*	***Biopesticide.*** *Pending use on cucurbit vegetables, lettuce, peppers, strawberry, and grapes.*
Myclobutanil (RALLY) (NOVA)	*Dow AgroSciences*	*Triazole*	*Powdery mildews, rusts, apple scab, brown rot (Monilinia spp.), shothole (Stimina spp.), cherry leaf spot (Coccomyces spp.) grape black rot (Guignardia spp.)*	*Registered on apple, asparagus, caneberry, cucurbits, currant, stone fruit, gooseberry, grapes, mayhaw, mint, snap bean, strawberry, tomato, banana, pear, almonds and grass seed. Pending uses on hop, pepper, sugarbeet, and artichoke. Potential use on lettuce and papaya.*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Oxolinic Acid (STARNER)	*Valent*	*Quinoline-*	*Controls gram-negative bacteria including rice grain rot, potato black leg, soft rot, and fire blight.*	*Potential use on apple, pear, potato, beans, fruiting vegetables and rice*
Pantoea agglomerans C9-1	*Plant Health Technology*	*Fungus*	*Fireblight*	*Pending use on apple and pear*
Peroxyacetic Acid	*Ecolab Inc.*	*Peroxyacetic acid*	*Post harvest decay and rot*	*Registered on cereal grains, herbs/spices, nut crops, stone fruits, pone fruits, fruiting vegetables, cucurbit vegetables,*
Phosphonic Acid (FOLI-R-FOS) (AGRI-FOS)	*Wilbur-Ellis Agrichem Mfg.*	*Phosphorus acid*	*Downy mildew, scab, and root rot*	*Potential use on asparagus, avocado, blueberry, Brassica leafy vegetables, caneberry, citrus, cucurbit vegetables, ginseng, hops, leafy vegetables, pineapple, pome fruit, bulb onions, strawberry, and tomato.*
Picoxystrobin (ZA 1963)	*Syngenta*	*Second generation strobilurin*	*Wide spectrum of diseases*	*Potential use on cereals, grape, hop and apple (Pending international registrations)*
Potassium Bicarbonate (KALIGREEN & ARMICARB)	*Toagosei, Church & Dwight*	*Inorganic salt*	*Powdery mildew*	***Biopesticide**. Potential registration on all crops.*
Potassium Dihydrogen Phosphate (eKsPunge)	*Lido Chemical*	*Potassium dihydrogen phosphate*	*Powdery mildew*	*Registered on apple, cherry, cucumber, grape, mango, melon, nectarine, peach, pepper, plum, squash, tomato, and watermelon*
Propamocarb Hydrochloride (PREVICAR)	*Aventis*	*Carbamate*	*Downy mildew, late blight, damping-off, Pythium, Phytophthora, and Aphanomyces. Should be mixed with other fungicides for resistance management.*	***Candidate Reduced Risk.** Registered on potato. Pending use on tomato, cucurbit, lettuce and pepper. Potential use on cabbage, radish, leek, garlic, peppers and other fruiting vegetables, bean, lychee, sugar apple, citrus, carrot, sugarbeet, onion, spinach, celery and greenhouse vegetables.*
Prochloraz (BUMPER)	*Makhteshim-Agan*	*Carboxamide*	*Powdery mildew, Fusarium spp, leafblotch, Botrytis, Alternaria, and others*	*Potential use on sugarbeet, rice, wheat, barley, rye, oats, stone fruit, citrus, canola, and vegetables.*
Propiconazole (TILT) (ORBIT)	*Syngenta*	*Triazole*	*Powdery mildew, rusts, smuts, Pyrenophora, Septoria, Cercospora, Cercosporidium, Ascochyta, Pseudocercosporela Myco sphaerella, Fusicladium, Gaeumannomyces, Monilinia, Clasterosporium, Helminthosporium and related genera, Kabatiella, Ceratocystis, Sclerotium, Rhizoctonia, Rhynchosporium, and Rhizopus.*	*Registered on celery, cereals, sweet corn, field corn, popcorn, grasses grown for seed, peanut, pineapple and sugarcane. Pending use on soybean, dry bean, almond, carrot, onion, raspberry, blueberry, cranberry, other tree nuts, sorghum and mint. Potential use on artichoke, garden beets, blackberry, parsley, and turnip greens.*
Pseudomonas chloroaphis Strain 63-28 (AtEze)	*Agrium*	*Bacteria*	*Target pest include soil borne diseases Rhizoctonia solani and Pythium spp. Outcompetes phytopathogenic species.*	***Biopesticide**. Registered on greenhouse vegetables*
Pseudomonas fluorescens PRA-25	*Good Bugs, Inc.*	*Bacteria*	*Controls Pythium seed rot and damping off.*	***Biopesticide**. Registered on pea, snap bean and sweet corn*
Pseudomonas syringae (BIOSAVE)	*EcoScience*	*Bacteria*	*Controls Fusarium.*	***Biopesticide**. Registered for seed/storage potato. Potential use on cranberry, banana, peach, plum and nectarine.*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Pseudozyma flocculosa SPORODEX WP	*Plant Products Ltd.*	*Bacteria*	*The product is for control of Powdery mildew*	***Biopesticide.*** *Pending use on greenhouse cucumber*
Pyraclostrobin (BAS 500F) (HEADLINE) (CABRIO)	*BASF*	*Strobilurin-Mitochondrial Electron Transport Inhibitor*	*Broad spectrum activity on Anthracnose, Alternaria, downy mildew, Cercospora leaf spot, rust, powdery mildew, Septoria, Phytophthora, Pythium, Rhizoctonia*	***Reduced Risk Product****. Pending use on berry fruits, peanut, grape, potato and other tuberous and corm vegetables, Cucurbit vegetables, Fruiting vegetables, Brassica leafy vegetables, head and leaf lettuce, wheat, barley, rye, grass seed, sugar beet, carrot, radish, and other root vegetables, Citrus fruits, Bulb vegetables, Stone fruit, banana, almond and other tree nuts/pistachio, strawberry, peanut, lentils, dried shelled peas and beans. Potential on tropical fruits, turnip greens celery and spinach.*
Pyrimethanil (SCALA)	*Aventis*	*Anilinopyrimidine*	*Active against Botrytis spp., Venturia spp., Alternaria solani, Alternaria mali, Sphaerotheca macularis and Monilinia spp.*	*Pending use on almond, apple, onion, stone fruit, strawberry, grape, potato, and tomato. Potential use on other pome fruit, peas, beans, caneberry, peppers and other fruiting vegetables, cucumbers, citrus, pistachio, greenhouse vegetables and banana.*
Quinoxyfen/DE795 (ARIUS) (QUINTEC)	*Dow AgroSciences*	*Quinoline-Distrrutpts early cell signling activities*	*Has shown activity against powdery mildew in a wide range of crops.*	***~~Candidate~~ Reduced Risk Product****. Pending use on grape, hop, and cherry. Potential use on cereals, fruiting vegetables, cucurbit vegetables, apple, and other stone fruit.*
Simeconazole (SANLIT)	*Sankyo*	*Triazole*	*Effective as seed treatment against Basidiomycetes*	*Potential use on wheat, barley, corn, rice, apple and strawberry.*
Silthiophan (LATITUDE)	*Monsanto*	*Carboxamide*	*Control of Take-All via seed treatment.*	*Potential use on wheat and barley (international uses approved).*
Spiroxamine (IMPULSE)	*Bayer*	*Morpholine*	*Powdery mildew, most rusts, Rhynchosporium leaf blotch. Chemical shows protective, curative and eradicative effects*	*Pending registration on grape and hop.*
Streptomyces lydicus WYEC 108	*Natural Industries*		*Control of soil borne plant root and damping off fungi*	***Biopesticide.*** *Pending use on all crops.*
SYP-L190	*Shenyang Reserch*	*Cinnamic acid derivative (analog of dimethomoroph)*	*Effective against oomycete fungi, including downy mildew*	*Potential use on grape, Brassica leafy vegetables, cucurbit vegetables and tomato.*
Tebuconazole (FOLICUR) (ELITE) (RAXIL)	*Bayer*	*Triazole*	*Powdery mildew, rusts, smuts, bunts, apple scab, Pyrenophora, Septoria, Coccomyces, Monilinia, Cercospora, Cercosporidium, Ceratocystis, Guignardia, Sclerotium Rhizoctonia Coccomyces, Rhynchosporium, Colletotrichum, Botrytis, and Rhizopus.*	*Registered on banana, cherry, nectarine, grape, grass seed and peanut. Pending registrations on cucurbit vegetables, turnip roots and greens, garlic, hop, wheat, tree nuts, cherry, mango, mustard greens, plums, barley, pistachio, sugarbeet, sunflower, cotton, dry beans, succulent beans, lychee, okra, coffee, asparagus, garlic and onion. Potential registration on sweet potato, and pome fruit.*
Tetraconazole (EMINENT 125SL) (TM 415)	*Sipcam Agro Tomen Agro*	*Triazole*	*Controls Cercospora leaf spot, powdery mildew, leafspots, rusts, web bloch, and others.*	*Pending use on sugarbeet and peanut. Potential use on blueberry.*
Thifluzamid (RH - 0753)	*Dow AgroScience*	*Thiazole-carbomanilide - Inhibits succinic acid metabolism in fungi.*	*Sclerotina and Rhizoctonia.*	*Potential use on peanut and rice.*

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
TM 416	*Tomen Agro*		*Bacterial speck and spot*	*Potential use on tomato, pepper, potato and rice.*
Tolylfluanid (EUPAREN MULTI)	*Bayer*	*Sulfenamide*	*Broad spectrum contact fungicide with good acaricidal effectiveness. Particularly suitable for control of resistant pathogen populations.*	*Potential use on apples, grapes and hops (international registrations pending).*
Trichoderma harzianum T-39/(TRICHODEX) T-22 (ROOTSHIELD)	*Makhteshim-Agan and Bioworks*	*Fungi*	*Controls Botrytis*	***Biopesticide**. Registered use on grapes and strawberry. Pending use on cabbage, garlic and soybean. Potential use on all other crops. ROOTSHIELD is being evaluated as part of IR-4's Methyl Bromide Alternative Program*
Trifloxystrobin (FLINT) (TWIST) (STRATEGO) *mix with propiconazole*	*Bayer*	*Strobilurin*	*Active against powdery mildew and leaf spot diseases. Also provides significant control of scab, rusts, downy mildew and other diseases.*	***Reduced Risk Product.** Registered on pome fruit, grape, cucurbits, peanut, banana, almond, sugar beet, potato, wheat, and hop, Pending uses on fruiting vegetables, carrot, celery, citrus, grass seed, and stone fruit.*
Triflumizole (PROCURE) (TERRAGUARD)	*Uniroyal*	*Triazole*	*Powdery mildew, rusts, apple scab, Rhizoctonia, Cylindrocladium, Thielaviopsis, Myrothecium, Alternaria, Helminthosporium and related genera.*	*Registered on apple, grape and pear. Pending registration on cherry, cucurbits, and strawberry. Potential use filbert.*
Zoxamide (GAVEL)	*Dow AgroScience*	*Amide (Inhibits mitosis by binding to fungal tubulin proteins)*	*Control of foliar phycamycetes and albugo. Also protectant against Oomycete fungi. Will be mixed with mancozeb for broader activity.*	***Reduced Risk Product**. Registered on grape and potato. Pending use on fruiting vegetables and curcurbit vegetables, (will be reviewed under NAFTA joint data review). Potential use on spinach.*

NEMATICIDES

Nematicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
Bacillus firmus (BIONEM) (BIOSAFE)	*Minrav Infrastructurer*	*Bacterial nematicide*	*Controls root knot and other nematodes including Heterodera avenae*	*Potential use on tomato, cucumber, and pepper. International registration (Israel) approved.*
Benzaldehyde				
Dazomet (BASAMID)	*BASF*	*Thiadiazine (carbon disulfide generator)*	*Simular to metam sodium*	***Partial Methyl Bromide Alternative**. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*
DiTera (Myrothecium vurrucaria strain AARC-0255)	*Valent BioScience*	*Biopesticide*	*Controls root knot, cyst, lesion, citrus, stubby root, pin, reniform, dagger, sting, ring, stunt, lance, spiral, burrowing and other plant parasitic nematodes.*	***Partial Methyl Bromide Alternative.** Registered on citrus, broccoli, cabbage, cauliflower, Brussel sprouts, and grapes. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*
DMDP	*BTG*	*Derived from the Costa Rican tree Lonchocarpus felipei*	*DMDP is phloem mobile, making it suitable for foliar applications*	***Biopesticide.** Potential use on banana and potato*
Fosthiazate (NEMATHORIN)	*ISK/Syngenta*	*OP*	*Controls nematodes*	***Partial Methyl Bromide Alternative**. Pending use on potatoes, banana, tomato, vegetables and peanut. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in tomato.*
Iodomethane	*Tomen Agro*	*Methyl Iodide*	*Similar to Methyl Bromide*	***Potential Methyl Bromide Alternative**. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*
NEMASYS (Steinernema feltiae)	*Emerald Bioagriculture*	*Biopesticide*		
NEMASYS H (Heterohababditis megidis)	*Emerald Bioagriculture*	*Biopesticide*		
NEMATAC C (Steinernema carpocapsae)	*Emerald Bioagriculture*	*Biopesticide*		*Pending use on cranberry*
Paecilomyces lilacinus (BIO ACT) (PL PLUS)	*Prophyta Gustafson*	*Bio-nematicide*	*Controls root knot and cyst nematodes*	***Biopesticide.** Potential use on banana, tobacco, pineapple, cucurbit vegetables, fruiting vegetables, cocoa, citrus fruit, and coffee.*
PLANTPRO 45	*Ajay N.A.*	*Iodine Complex*	*Many pests controled by Methyl Bromide*	***Partial Methyl Bromide Alternative.** Being evaluated as part of IR-4's Methyl Bromide Alternative Program.*
Propargyl Bromide	*Abermarle*	*Propargyl bromide*	*Similar to Methyl Bromide*	***Potential Methyl Bromide Alternative.** Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*
PROPOXIDE	*Aberco*	*Propylene oxide*	*Fumigant for stored nuts and spices*	***Potential Methyl Bromide Alternative**. Registered on nut crops. Being evaluated as part of IR-4's Methyl Bromide Alternative Program*
Sodium Tetrathiocarbonate (ENZONE)	*Entek Corporation Helena*	*Sodium Tetrathiocarbonate (carbon disulfide*	*Water soluble soil fumigant for management of, plant parasitic nematodes, various soil borne*	***Potential Methyl Bromide Alternative**. Registered on grape and citrus. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*

Nematicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
		generator)	*pathogens and other soil pests.*	
TELONE (INLINE Formulation)	*Dow AgroSciences*	*1,3,dichloropropene + chloropicrin*	*Many soil insects, nematodes and plant diseases*	***Partial Methyl Bromide Alternative**. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato*
TERRAPY	*Cognis Deutschland*	*Fatty acid preparation in alkyl(poly)glycoside*	*Shown to significantly reduce Meloidogyne infestations*	***Biopesticide**. Potential use on tomato, carrot cucumber, sugar beet, and potato*
ZA 3274	*Syngenta*	*Novel mode of action*		*Unknown status/early development stage. International use only*

OTHER TYPES OF PEST CONTROL PRODUCTS

Chemical (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
Methyl Anthranilate		*Bird Repellent*		*Registered on grape, blueberry, cherry, corn and sunflower*